

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

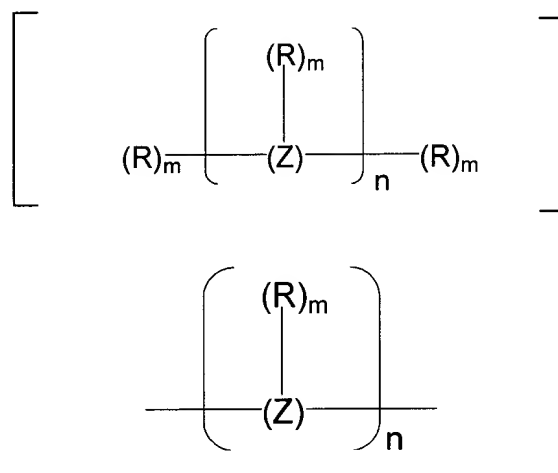
Claims 1-10 (withdrawn)

Claims 11-22 (cancelled)

Claims 23-30 (withdrawn)

Claims 31-104 (cancelled)

105. (currently amended): A polyamino acid with the structure:



and salts thereof, where:

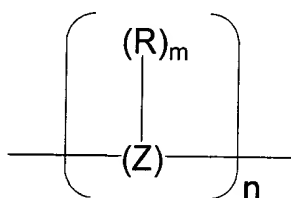
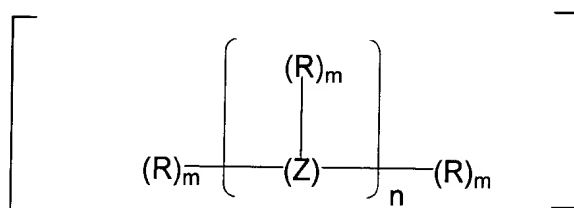
n is an integer ranging from 2 to about 2,000;

m is either 0 or 1, provided that m is 1 at least once in the compound and m is zero at least once in the compound ~~when Z is an amino acid and when m=0 for R~~ at a terminus, the terminus termini of the polyamino acid is are an NH<sub>2</sub> or and a carboxyl group;

R is R<sub>A</sub> or R<sub>B</sub>, where R<sub>A</sub> is C<sub>1-23</sub> alkyl or alkenyl and R<sub>B</sub> is a steroid selected from the group consisting of stigmasterol, ergosterol and cholic acid; and

Z is a basic amino acid wherein Z groups are linked by peptide bonds.

106. (currently amended): A compound according to claim 105 where Z is selected from the group of amino acids consisting of ornithine, lysine, arginine and histidine.
107. (previously added): A compound according to claim 105 where Z is L-ornithine.
108. (currently amended): A polysaccharide with the structure:



and salts thereof where:

n is an integer ranging from 2 to about 2,000;

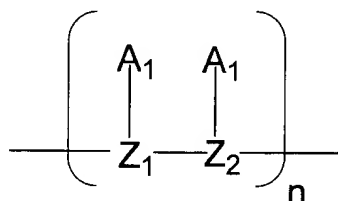
m is either 0 or 1;

R is  $R_A$  or  $R_B$ , where  $R_A$  is an alkyl or alkenyl group having 12 to 22 carbon atoms and  $R_B$  is a steroid selected from the group consisting of stigmasterol, ergosterol and cholic acid; and

Z is a monosaccharide having from 3 to 7 carbon atoms wherein Z groups are linked by glycosidic bonds, ~~when m=0 for R at a terminus, the terminus the~~ termini of the polysaccharide dependent upon Z is are H or OH.

109. (currently amended): A compound according to claim 108 where said sugar monosaccharide comprises a cationic substituent.
110. (previously added): A compound according to claim 109 where said cationic substituent is a tertiary amine.
111. (currently amended): A compound according to claim 109 where said [caionic] cationic substituent is diethylaminoethyl.
112. (currently amended): A compound according to claim 109 where said sugar monosaccharide is glucose and [siad] said cationic [subsitutent] substituent is diethylamioethyl.
113. (previously added): A composition for transfecting a cell with a nucleic acid which comprises a nucleic acid and one or more compounds according to claim 105.
114. (currently amended): A lipid aggregate which comprises one or more compounds ~~of~~ according to claim 105.
115. (previously added): A method for transfecting a cell comprising the step of contacting the cell with a lipid aggregate comprising a nucleic acid and one or more compounds according to claim 105.
116. (currently amended): [Acomposition] A composition for transfecting a cell with a nucleic acid which comprises a one or more compound of compounds according to claim 105 capable of complexing said nucleic acid to be transfected into said cell, and a transfection-enhancing agent selected from the group consisting of an enveloped virus, a membrane virus, a viral component, and a non-viral fusagenic compound.
117. (previously added): A composition according to claim 116 wherein said transfection-enhancing agent is an enveloped virus, and wherein said enveloped virus is an alphavirus.

118. (previously added): A composition according to claim 117 wherein said alphavirus is Semliki Forest virus.
119. (previously added): A composition according to claim 116 wherein said transfection-enhancing agent is a viral component and wherein said viral component is selected from the group consisting of viral proteins, envelope fusion peptides, viral spike glycoproteins, viral peptides of viral spike glycoproteins, and viral envelope fragments containing embedded viral protein.
120. (previously added): A composition according to claim 116 wherein said transfection-enhancing agent is a non-viral fusagenic peptide.
121. (currently amended): A method for transfecting a cell comprising the steps of contacting the cell with a one or more transfecting composition of compositions according to claim 116.
122. (currently amended): A transfection kit which comprises one or more compounds of according to claim 105.
123. (currently amended): The transfection kit of claim 122 further comprising one or more of a viral agent, a component of an enveloped virus, or a non-viral fusagenic peptide.
124. (currently amended): A lipophilic polyamino acid of the formula:



and salts thereof,

where:

$Z_1$  and  $Z_2$ , independently of one another, are both amino acids selected from the group consisting of ornithine, lysine, arginine and histidine;

$n$  is an integer ranging from 1 to about 2,000;

$A_1$  and  $A_2$ , independently of one another, are selected from the group consisting of the groups  $X_1 - X_4$  as follows:

$X_1$  is a straight-chain alkyl, alkenyl, or alkynyl group having from 2 to about 22 carbon atoms wherein one or more non-neighboring  $-CH_2-$  groups can be replaced with an O or S atom;

$X_2$  is a branched alkyl, alkenyl, or alkynyl group having from 2 to about 22 carbon atoms wherein one or more non-neighboring  $-CH_2-$  groups can be replaced with an O or S atom;

$X_3$  is a straight-chain or branched alkyl group substituted with one or two OH, SH,  $NH_2$  or amine groups within about 3 carbon atoms of the bond between  $X_3$  and  $Z_1$  or  $Z_2$ ;

$X_4$  is a substituted straight-chain or branched alkyl, alkenyl or alkynyl group having from 2 to about 22 carbon atoms wherein the substituent is an aromatic, alicyclic, heterocyclic or polycyclic ring and wherein one or more of the non-neighboring  $-CH_2-$  groups of said alkyl, alkenyl or alkynyl group can be substituted with an O or S atom; and

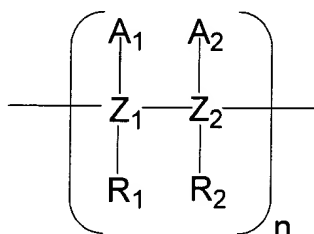
the ~~termini~~ termini of the polyamino acid are an  $NH_2$  and a OH.

125. (previously added): The lipophilic polyamino acid of claim 124 wherein  $n$  is between 10 and 50.

126. (previously added): The lipophilic polyamino acid of claim 124 wherein  $Z_1$  and  $Z_2$  are lysines.

127. (previously added): The lipophilic polyamino acid of claim 124 wherein  $Z_1$  and  $Z_2$  are arginines.
128. (previously added): The lipophilic polyamino acid of claim 124 wherein  $A_1$  and  $A_2$ , independently of one another, are a straight-chain or branched alkyl, alkenyl, or alkynyl group having from 2 to about 22 carbon atoms wherein one or more non-neighboring  $-CH_2-$  groups can be replaced with an O or S atom.
129. (previously added): The lipophilic polyamino acid of claim 128 wherein alkyl, alkenyl, or alkynyl groups have from about 12 to about 22 carbon atoms.
130. (previously added): The lipophilic polyamino acid of claim 124 wherein the  $A_1$  and  $A_2$  groups are alkyl groups having from about 12 to about 22 carbon atoms.
131. (currently amended): The lipophilic polyamino acid of claim 124 wherein  $A_1$  and  $A_2$ , independently of one another, are straight-chain or branched alkyl groups substituted with one or two OH, SH,  $NH_2$ , or amine groups within about 3 carbon atoms of the bond between  $X_3$  and  $Z$ ,  $Z_1$  or  $Z_2$
132. (previously added): The lipophilic polyamino acid of claim 124 wherein  $A_1$  and  $A_2$ , independently of one another, are substituted straight-chain or branched alkyl, alkenyl or alkynyl groups having from 2 to about 22 carbon atoms wherein the substituent is an aromatic alicyclic, heterocyclic or polycyclic ring and wherein one or more of the non-neighboring  $-CH_2-$  groups of said alkyl, alkenyl or alkynyl group can be substituted with an O or S atom.
133. (currently amended): A composition for transfecting cells which comprises a nucleic acid and ~~a~~one or more lipophilic polyamino acid ~~of~~acids according to claim 124.
134. (previously added): The composition of claim 133 wherein the  $A_1$  and  $A_2$  groups of said lipophilic polyamino acid are alkyl groups having from about 12 to about 22 carbon atoms.

135. (currently amended): A lipid aggregate comprising a one or more lipophilic polyamino ~~acid~~ acids according to claim 124.
136. (previously added): A method for transfecting a cell which comprises the step of contacting the composition of claim 133 with a cell.
137. (currently amended): A transfection kit which comprises one or more lipophilic polyamino acids ~~of~~ according to claim 124.
138. (currently amended): A lipophilic polycationic polysaccharide of formula:



and salts thereof,

where:

$Z_1$  and  $Z_2$ , independently of one another, are monosaccharides;

$n$  is an integer ranging in value from 1 to about 600;

$R_1$  and  $R_2$ , independently of one another, are tertiary amines; and

$A_1$  and  $A_2$ , independently of one another, are selected from the group consisting of groups  $X_1 - X_4$  as follows:

- $X_1$  is a straight-chain alkyl, alkenyl, or alkynyl group having from 2 to about 22 carbon atoms wherein one or more non-neighboring  $-\text{CH}_2-$  groups can be replaced with an O or S atom;
- $X_2$  is a branched alkyl, alkenyl, or alkynyl group having from 2 to about 22 carbon atoms wherein one or more non-neighboring  $-\text{CH}_2-$  groups can be replaced with an O or S atom;

X<sub>3</sub> is a straight-chain or branched alkyl group substituted with one or two OH, SH, NH<sub>2</sub> or amine groups within about 3 carbon atoms of the bond between X<sub>3</sub> and Z Z<sub>1</sub> or Z<sub>2</sub>;

X<sub>4</sub> is a substituted straight-chain or branched alkyl, alkenyl or alkynyl group having from 2 to about 22 carbon atoms wherein the substituent is an aromatic, alicyclic, heterocyclic or polycyclic ring and wherein one or more of the non-neighboring -CH<sub>2</sub>- groups of said alkyl, alkenyl or alkynyl group can be substituted with an O or S atom; and

the ~~termini~~ termini of the polysaccharide ~~dependent upon Z~~ are H and or OH dependent upon the structures of monosacharrides Z<sub>1</sub> and Z<sub>2</sub>.

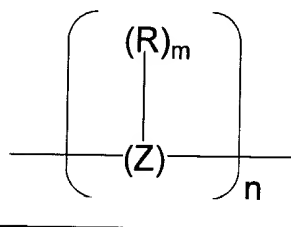
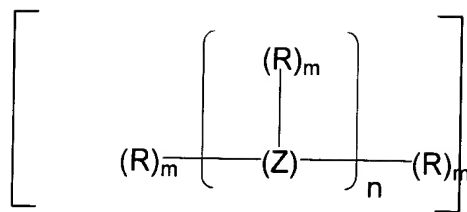
139. (previously added): The polycationic polysaccharide of claim 138 wherein Z<sub>1</sub> and Z<sub>2</sub> are both glucose.
140. (previously added): The polycationic polysaccharide of claim 138 wherein n is between 50 and 100.
141. (previously added): The polycationic polysaccharide of claim 138 wherein R<sub>1</sub> and R<sub>2</sub> are diethylaminoethyl groups.
142. (previously added): The polycationic polysaccharide of claim 138 wherein A<sub>1</sub> and A<sub>2</sub>, independently of one another, are a straight-chain or branched alkyl, alkenyl, or alkynyl group having from 2 to about 22 carbon atoms wherein one or more non-neighboring -CH<sub>2</sub>- groups can be replaced with an O or S atom.
143. (previously added): The polycationic polysaccharide of claim 138 wherein alkyl, alkenyl, or alkynyl groups have from about 12 to about 22 carbon atoms.
144. (currently amended): The polycationic polysaccharide of claim 138 wherein A<sub>1</sub> and A<sub>2</sub>, independently of one another, are straight-chain or branched alkyl



groups substituted with one or two OH, SH, NH<sub>2</sub> or amine groups within about 3 carbon atoms of the bond between X<sub>3</sub> and ~~Z~~ Z<sub>1</sub> or Z<sub>2</sub>.

145. (previously added): The polycationic polysaccharide of claim 138 wherein A<sub>1</sub> and A<sub>2</sub>, independently of one another, are substituted straight-chain or branched alkyl, alkenyl or alkynyl groups having from 2 to about 22 carbon atoms wherein the substituent is an aromatic, alicyclic, heterocyclic or polycyclic ring and wherein one or more of the non-neighboring -CH<sub>2</sub>- groups of said alkyl, alkenyl or alkynyl group can be substituted with an O or S atom.
146. (currently amended): A composition for transfecting cells which comprises a nucleic acid and a one or more polycationic ~~polysaccharide of polysaccharides~~ according to claim 138.
147. (previously added): The composition of claim 146 wherein the A<sub>1</sub> and A<sub>2</sub> groups of said polycationic polysaccharide are alkyl groups having from about 12 to about 22 carbon atoms.
148. (currently amended): A lipid aggregate comprising a one or more polycationic ~~polysaccharide of polysaccharides~~ according to claim 138.
149. (previously added): A method for transfecting a cell which comprises the step of contacting the composition of claim 146 with a cell.
150. (previously added): A transfection kit which comprises one or more polycationic ~~polysaccharides of~~ according to claim 138.
151. (previously added): A composition for transfecting a cell with a nucleic acid which comprises a nucleic acid and one or more compounds according to claim 108.
152. (currently amended): A lipid aggregate which comprises one or more compounds ~~of~~ according to claim 108.

153. (currently amended): A method for transfecting a cell comprising ~~eh~~the step of contacting the cell with a lipid aggregate comprising a nucleic acid and one or more compounds according to claim 108.
154. (currently amended): A transfection kit which comprises one or more compounds ~~of~~ according to claim 108.
155. (currently amended): A composition for transfecting a cell with a nucleic acid which comprises a compound of claim 161 capable of complexing said nucleic acid to be transfected into said cell, and a one or more transfection-enhancing agent ~~agents~~ selected from the group consisting of an enveloped virus, a membrane virus, a viral component, and a non-viral fusagenic compound.
156. (previously added): A composition according to claim 155 wherein said transfection-enhancing agent is an enveloped virus, and wherein said enveloped virus is an alphavirus.
157. (previously added): A composition according to claim 155 wherein said alphavirus is Semliki Forest virus.
158. (previously added): A composition according to claim 155 wherein said transfection-enhancing agent is a viral component and wherein said viral component is selected from the group consisting of viral proteins, envelope fusion peptides, viral spike glycoproteins, viral peptides of viral spike glycoproteins, and viral envelope fragments containing embedded viral protein.
159. (previously added): A composition according to claim 155 wherein said transfection-enhancing agent is a non-viral fusagenic peptide.
160. (currently amended): A method for transfecting a cell comprising the ~~steps~~step of ~~contact~~ contacting the cell with the composition of claim 155.
161. (currently amended): A polyamino acid with the structure:



and salts thereof, where:

n is an integer ranging from 2 to about 2,000;

m is either 0 or 1, provided that m is 1 at least once in the compound and m is zero at least once in the compound ~~when Z is an amino acid and when m=0 for R at a terminus~~, the terminus termini of the polyamino acid is are an NH<sub>2</sub> and a OH;

R is R<sub>A</sub> or R<sub>B</sub>, where R<sub>A</sub> is C<sub>1-23</sub> alkyl or alkenyl and R<sub>B</sub> is a steroid selected from the group consisting of stigmasterol, ergosterol and cholic acid; and

Z is an amino acid wherein Z groups are linked by peptide bonds.